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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/319,092	06/18/1999	MICHAEL TEWES	TEWESETAL	2371

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EXAMINER

LEE, SHUN K

ART UNIT PAPER NUMBER

2878

DATE MAILED: 11/23/2001

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/319,092

Applicant(s)

TEWES ET AL.

Examiner

Shun Lee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 September 2001.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 22-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 22-41 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 June 1999 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☒ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Oath/Declaration

1. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

It does not identify the foreign application for patent or inventor's certificate on which priority is claimed pursuant to 37 CFR 1.55, and any foreign application having a filing date before that of the application on which priority is claimed, by specifying the application number, country, day, month and year of its filing. That is, the country for application number 196 49 605.5 should be Germany and not PCT.

Drawings

2. The drawings are objected to because of the reasons indicated on PTO-948. It should be noted that objections to the drawings in a utility or plant application will not be held in abeyance, and a request to hold objections to the drawings in abeyance will not be considered a *bona fide* attempt to advance the application to final action (see 37 CFR 1.85(a) and § 1.135(c)). Correction is required.

Specification

3. The abstract of the disclosure is objected to because: "microscope-" should be --microscope--. Correction is required. See MPEP § 608.01(b).
4. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: (a) newly added independent claim 22 recites the limitation "a fiber optic array disposed within said support body for coupling in a stimulating light"

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and it should be noted that the specification fails to provide antecedent basis for array (see for example, "fiber of the optical waveguide" in the last sentence on pg. 10 of specification); and (b) newly added dependent claim 39 recites the limitation "natural aperture" and it should be noted that the specification fails to provide antecedent basis for natural (see for example, "numerical aperture" in the last sentence on pg. 10 of specification).

Claim Objections

5. Claims 27 and 30 are objected to because of the following informalities:

(b) on line 2 in claim 27, "dichronic" should probably be --dichroic--; and

(b) on line 2 in claim 30, "dichronic" should probably be --dichroic--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 27, 28, 32, 33, 35, 36, and 38-40 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 27 recites the limitation "said beam path" in lines 2 and 3. There is insufficient antecedent basis for this limitation in the claim.

Claim 32 recites the limitation "said receptacle holder" in line 3. There is insufficient antecedent basis for this limitation in the claim.

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Claim 35 recites the limitation "the beam path" in line 4. There is insufficient antecedent basis for this limitation in the claim.

Claim 36 in lines 3-5 recites the limitation "a connection flange for attaching to support body to the connection of the microscope" which fails to particularly point out that the connection flange is for attaching the support body to the connection of the microscope as described in the specification.

Claim 38 recites the limitation "said filter devices" in lines 2-3. There is insufficient antecedent basis for this limitation in the claim.

Claim 39 recites the limitation "said housing" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 39 recites the limitation "said natural aperture" in lines 2-3. There is insufficient antecedent basis for this limitation in the claim.

Claim 39 recites the limitation "said fiber optic waveguide" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Claim 39 recites the limitation "said emission wavelengths" in lines 2-3. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 22-24, 27-34, and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jörgens (US 5,535,052) in view of Engelhardt *et al.* (US 5,903,688) in so far as understood.

In regard to claim **22**, Jörgens discloses (Fig. 2) a fluorescence module (C) arrayed in an optical connection of a microscope (A, B; column 5, lines 13-16) comprising:

- (a) a support body (C);
- (b) a coupling connection (*i.e.*, the connection onto which module D attaches for the coupling of the stimulating light 61 is shown in Fig. 2 but not labeled; see column 6, lines 9-17) disposed within said support body (C); and
- (c) a pinhole array (46, 44, 45) comprising one pinhole (*e.g.*, 46) disposed within said support body (C).

The fluorescence module of Jörgens lacks coupling the stimulating light via a single mode fiber optical waveguide. Engelhardt *et al.* teach that it is known in the art that a

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stimulating light such as from a laser can be fed into a microscope via a flexible light guide (4 as shown in the Fig.) as an alternative to direct feeding in order to isolate mechanical disturbances from being transmitted to the microscope (column 1, lines 15-52). Engelhardt *et al.* also teach (in the Fig.) a connection (7) to the coupling of the stimulating light (1) to an optical module (8) via a flexible light guide (4).

Engelhardt *et al.* further teach that the laser light used as stimulating light is coupled in through a single mode fiber optical waveguide (column 4, lines 6-8). Therefore it would have been obvious to one having ordinary skill in the art to provide the stimulating light source in the fluorescence module of Jörgens via a single mode fiber optical waveguide, in order to feed stimulating light into the microscope while isolating the microscope from mechanical disturbances as taught by Engelhardt *et al.*

In regard to claims **23** and **24** which are dependent on claim 22, Jörgens also teaches that the optical connection of the microscope is an optical inlet or an optical outlet (column 2, lines 15-19).

In regard to claim **27** which is dependent on claim 22, Jörgens also teaches that a filter array (column 6, lines 14 and 15) and a dichroic beam splitter (36) are arrayed in the beam path before the stimulating light is coupled into the microscope.

In regard to claim **29-31** which are dependent on claim 22, Jörgens also teaches that at least one optical unit with one dichroic beam splitter (37, 38) and/or one mirror (39) is provided in the emission beam path (column 5, line 63 to column 6, line 8). The fluorescence module of Jörgens lacks dichroic beam splitters position behind the pinholes. Jörgens teaches that for confocal microscopic fluorescence investigations,

respective stops (*i.e.*, pinholes) can be positioned in each of several planes that are confocal with the focal plane of the objective (column 2, lines 64-66). Jörgens teaches that a plurality of reflector slides containing color dividers (*e.g.*, dichroic beam splitters) can be used to set the most varied of wavelength combinations (column 5, line 63 to column 6, line 8). Therefore inherent in the teachings of Jörgens are sliders containing color dividers (*e.g.*, dichroic beam splitters) that can be positioned behind apertures located at a confocal plane in the fluorescence module, in order to perform confocal microscopic fluorescence investigations at the wavelength ranges selected with the color dividers.

In regard to claim **28** (which is dependent on claim 27) and claims **32** and **33** (which are dependent on claim 29) Jörgens also teaches that dichroic beam splitters (such as 36) should be set into a slider (column 5, line 63 to column 6, line 8) and that filters for selecting the stimulating and/or emission wavelengths are also provided on sliders (column 4, lines 7-20). The fluorescence module of Jörgens lacks an explicit description that the filter array is also set on a common receptacle holder that can be inserted removably in the support body together with the beam splitter. However, Jörgens further teaches that a number of combinations of beam splitter and/ or mirrors with associated filters can be mounted in slider (9) which have switching positions (*i.e.*, inserted removably) in order to select a particular combination of beam splitter and/or mirrors with associated filters (column 4, lines 7-20). Therefore it would have been obvious to one having ordinary skill in the art to set the filters in the same receptacle holder (*i.e.*, slider) as the beam splitter with switching positions in the fluorescence

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module of Jörgens, in order to select a particular combination of beam splitter and/ or mirrors with associated filters.

In regard to claim **34** which is dependent on claim 22, Jörgens also teaches that a lens array (40, 41, 42) for focusing the emission light on the detector (47, 48, 49) is provided in the emission beam path before a detector (47, 48, 49).

In regard to claim **41** which is dependent on claim 22, Jörgens also teaches a microscope with a fluorescence module according to claim 1 (see Figs. 1 and 2).

11. Claims 25, 26, 39, and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jörgens (US 5,535,052) in view of Engelhardt *et al.* (US 5,903,688) as applied to claim 22 above, and further in view of Chande (US 4,844,574) in so far as understood.

In regard to claims **25** and **26** which are dependent on claim 22, the modified fluorescence module of Jörgens lacks a collimator for generating a parallel light beam which is arrayed at the support body in the beam path after the coupling connection and an adjustable lens array for focusing the beam path confocally with the pinhole.

Engelhardt *et al.* teach that it is known in the art that a stimulating light such as from a laser can be feed into a microscope via a flexible light guide (4 as shown in the Fig.) as an alternative to direct feeding in order to isolate mechanical disturbances from being transmitted to the microscope (column 1, lines 15-52). The connection (output coupler 7 in the Fig.) taught by Engelhardt *et al.* is known in the art. For example, Chande teaches (Fig. 1) that a typical prior art output coupler comprises of a fiber holder (*i.e.*, coupling connection 102) and a collimator (108) in order to generate a parallel light

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beam (110). Engelhardt *et al.* also teach (in the Fig.) that an adjustable lens array (10) for focusing the beam path confocally with the pinhole is provided in the beam path after the output coupler (7) for coupling of the stimulating light (1) to an optical module (8) via a flexible light guide (4). Therefore it would have been obvious to one having ordinary skill in the art to provide an optical fiber output coupler comprising of a collimator and an adjustable lens array in the modified fluorescence module of Jörgens, in order to feed stimulating light into the microscope while isolating the microscope from mechanical disturbances as taught by Engelhardt *et al.* and to generate a parallel light beam as taught by Chande.

In regard to claim **39** which is dependent on claim 22, the modified fluorescence module of Jörgens lacks a collimator which is tuned to the numerical aperture of the fiber optical waveguide. Chande teaches that the focal length (f_1) and clear aperture (*i.e.*, parallel light beam diameter D_1) of the collimator (108) must be selected in order to intercept the fiber emitted beam (column 3, lines 19-25). It is noted that the numerical aperture is defined as the sine of half the acceptance angle (*i.e.*, see θ_{EM} in Fig. 1 of Chande). Therefore it would have been obvious to one having ordinary skill in the art to match the focal length and clear aperture (*i.e.*, numerical aperture) of the collimator to the emitted beam angle (*i.e.*, numerical aperture) of the fiber in the modified fluorescence module of Jörgens, in order to intercept and collect the fiber emitted beam as taught by Chande.

In regard to claim **40** which is dependent on claim 39, Jörgens also teaches that dichroic beam splitters (such as 36) should be set into a slider (column 5, line 63 to

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column 6, line 8) and that filters for selecting the stimulating and/or emission wavelengths are also provided on sliders (column 4, lines 7-20). The fluorescence module of Jörgens lacks an explicit description that the filter array is also set on a common receptacle holder that can be inserted removably in the support body together with the beam splitter. However, Jörgens further teaches that a number of combinations of beam splitter and/ or mirrors with associated filters can be mounted in slider (9) which have switching positions (*i.e.*, inserted removably) in order to select a particular combination of beam splitter and/or mirrors with associated filters (column 4, lines 7-20). Therefore it would have been obvious to one having ordinary skill in the art to set the filters in the same receptacle holder (*i.e.*, slider) as the beam splitter with switching positions in the fluorescence module of Jörgens, in order to select a particular combination of beam splitter and/ or mirrors with associated filters.

12. Claims 35-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jörgens (US 5,535,052) in view of Engelhardt *et al.* (US 5,903,688) as applied to claim 22 above, and further in view of Schalz (US 5,585,964) in so far as understood.

In regard to claim **35** which is dependent on claim 22, the modified fluorescence module of Jörgens lacks a detailed description of the receptacle holder (*i.e.*, slider), characterized in that the support body (4) for receiving the receptacle holder (15) is provided with shaped surfaces (25), to which the receptacle holder (15) provided with complementarily shaped surfaces arrayed on the support body in the beam path can be fixed. Schalz teaches that holding elements (*i.e.*, sliders, carriers, or slide-in-modules; see column 2, lines 36-54) have “ ... corresponding precision-stop-surfaces ... for the

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exact positioning of the holding element ... " (see also column 4, lines 21-23). Schalz also teaches that these holding elements are designed to contain optical elements such as fluorescence-dividing cubes with switching positions (column 2, lines 60-67).

Therefore it would have been obvious to one having ordinary skill in the art to provide corresponding precision-stop-surfaces in the sliders of the modified fluorescence module of Jörgens, in order to have exact positioning and alignment of the optical elements in the sliders as taught by Schalz.

In regard to claim **36** which is dependent on claim 22, the modified fluorescence module of Jörgens lacks an explicit description of a connection flange for attaching the support body to the connection of the microscope and a support body which is made in one piece from a metallic material. Schalz teaches that modularly designed microscopes should be manufactured of metal such as aluminum or brass in a one-piece construction-type in order to increase rigidity (column 4, lines 1-25). Schalz also teaches that a modular microscope system makes it possible to attach modules (*i.e.*, support body) via precision attachment surfaces (*e.g.*, connection flange) without additional alignment or optical adjustment (column 6, lines 29-40). Therefore it would have been obvious to one having ordinary skill in the art to manufacture the modified fluorescence module of Jörgens as a metallic one-piece construction-type that can be attached to a precision attachment surface of a modular microscope, in order to have rigid module that can be attached to a microscope without additional alignment or optical adjustment as taught by Schalz.

In regard to claim **37** which is dependent on claim 22, the modified fluorescence module of Jörgens lacks an explicit description that the support body is made with cavities for receiving the receptacle holder, wherein the said cavities have suitable lateral surfaces designed to accommodate the oriented reception of the receptacle holder. Schalz teaches that a carrier (*i.e.*, receptacle holder) has corresponding precision-stop-surfaces (*e.g.*, lateral surfaces of a cavity) for exact positioning (column 2, lines 46-59) without additional alignment or optical adjustment (column 6, lines 29-40). Therefore it would have been obvious to one having ordinary skill in the art to provide cavities with corresponding precision-stop-surfaces in the modified fluorescence module of Jörgens, in order to have exact positioning without additional alignment or optical adjustment as taught by Schalz.

In regard to claim **38** which is dependent on claim 37, Jörgens also teaches that the receptacle holders (*i.e.*, sliders) are provided with at least two frequency-selective filter devices (*i.e.*, fluorescence filter sets; see column 4, lines 7-20).

Response to Arguments

13. Applicant's arguments filed 17 September 2001 have been fully considered but they are not persuasive.

In response to applicant's argument (fourth paragraph on pg. 7 of remarks filed 17 September 2001) that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (*i.e.*, splitting the beam after the pinhole array containing one pinhole) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the

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specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

It is noted that applicant's arguments with regard to the dependent claims relies on the independent claim being patentable. Thus applicant's arguments are not persuasive.

Conclusion

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

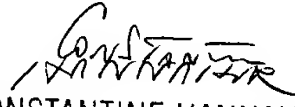
15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shun Lee whose telephone number is (703) 308-4860. The examiner can normally be reached on Tuesday-Thursday.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seungsook Ham can be reached on (703) 308-4090. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7724 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

SL
November 20, 2001


CONSTANTINE HANNAHER
PRIMARY EXAMINER
GROUP ART UNIT 2878